omega

The International Journal of Management Science

Volume 7 1979

Author and Title Index

● **Chief Editor**
Professor SAMUEL EILON,
DSc(Eng.), PhD
Department of Management Science, Imperial College, London, SW7 2BX

● **Associate Editors**
RJ BETTS and **RB FLAVELL**
Department of Management Science, Imperial College, London, SW7 2BX

Editorial Advisory Board

Professor RJ BALL
London Graduate School of Business Studies, Sussex Place, Regent's Park, London NW1 4SA

Professor BEN BERNHOLTZ
Department of Industrial Engineering, University of Toronto, Toronto 5

Professor C WEST CHURCHMAN
Space Sciences Laboratory, University of California, Berkeley, CA 94720

Professor WW COOPER
Graduate School of Business Administration, Harvard University, Boston, MA 02163

Professor BELA GOLD
Department of Economics, Case Western Reserve University, Cleveland, OH 44106

Professor CH GUDNASON
Danmarks Tekniske Højskole, København

Professor DOUGLAS C HAGUE
Manchester Business School, Booth Street West, Manchester M15 6PB

DAVID B HERTZ
McKinsey and Company Inc., 245 Park Avenue, New York, NY 10017

Professor KNUT HOLT
The Norwegian Institute of Technology, 7034 Trondheim

Professor HAROLD J LEAVITT
Graduate School of Business, Stanford University, Stanford, CA 94305

Professor GERALD J LIEBERMAN
Department of Operations Research, Stanford University, Stanford CA 94305

Professor RINTARO MURAMATSU
Department of Industrial Engineering, Waseda University, 4-170 Nishiokubo, Sinjuku-ku, Tokyo 160

NAOMI YAMAKI, President
Mitsubishi Space Software Co Ltd, 2-4-1, Hamamatsu-Cho, Minato-Ku, Tokyo 105

PERGAMON PRESS
Oxford · New York · Toronto · Paris
Frankfurt · Sydney

AUTHOR INDEX

Ackoff RL 179
Amara R 273
Arcade SH 355
Atherton J 104

Babu S 153
Barbaroussis N 82
Barrett M 431
Baum S 249
Bechtold SE 565
Beckett T 101
Bennett PG 309
Bhandari L 359
Bowen KC 489, 503
Bradley SP 77
Brown DJ 55
Bryer RA 219
Burton RM 113
Button KJ 399

Carlson R 249
Chiang DT 287
Common MS 385
Corner LJ 257
Cosmetatos G 82

Damon WW 113
Davies D 275
Doholakia N 359
Duncan CP 345

Eden C 119
Eilon S 1, 82, 89, 166, 173, 269, 481
Ellis PM 573

Finney MJ 333
Firth M 129
Flavell R 25
Foy N 180
Frey SC 77

Gentry JW 241
Giesen MCT 309
Ginzberg MJ 527
Glisson CA 180
Gordon LA 67
Graham RJ 61
Gray A 451
Greer WR Jr 361
Gustavsson SO 179

Haessler RW 145
Heald D 469
Hinomoto H 567

Jackson D 43
Jones WH 9

Keeney RL 191, 364
Keown AJ 345
Khurana R 359
King JR 233
Kleijnen JPC 539
Kottas JF 80
Kulkarni RB 191
Kwak NK 367

LaCava GJ 361
Larcker DF 67
Larréché J-C 207
Lau H-S 80
Levine G 321
Lewis D 421
Lowe J 421

Mann JR 513
Meade N 333
Mitchell GH 513
Moore PG 183
Morse JJ 489
Moseley R 105

Nahmias S 321
Nair K 191
Narula S 137
Nash CA 441

Oakley MH 9
Ogbu U 137

Pearce DW 379
Penn E 25

Rivett BHP 33

Salkin GR 25
Schniederjans MJ 367
Sculli D 557
Seltzer J 61
Shanteau J 241
Shirland LE 573
Simpson DRF 371
Sims D 119
Soenen LA 339
Starr MK 490
Steele R 451
Steger WA 561
Stratton A 565
Strong EC 207
Sweet T 43

Tadikamalla PR 560
Taylor BW III 345
Treddenick JM 459
Tuggle FD 67
Turner RK 411

Vogel MA 559
Vora MN 359
Vrat P 153

Walbank M 297
Wensley JRC 15
Williams HP 163
Wills G 104
Woolley RN 574

TITLE INDEX

Ackoff's Fables (Editorial) 89
Ackoff's Fables (Feedback) 179
Ackoff's Fables (Feedback) 490
Allocation of Research and Development Funds: a Zero–One Goal Programming Approach 345
Analysis of the Choice between Domestic and Foreign Loan Facilities 333
Application of Catastrophe Theory to Management Science Process 61
Aristotle's Fallacy: a Hypergame in the Oil Shipping Business 309
Assessment of Fifteen Years of Urban Modeling 545

Budgets for Integrating Decentralized Investment and Production Planning 113

Capital Rationing and Discounting in Public Sector Investment Decisions 77
Capital Rationing Decision with Internal and External Funds 567
Case Study in Venture Management 9
Change, Clarity and Clausewitz 275
Cost–Benefit Analysis—a Critique 411
Cost–Effectiveness in Defence Expenditure 459
Creativity and Operational Research 574

Decision Model with Stochastic Cost and Demand Curves 80
Disclosure of Information by Companies 129
Dynamic Aspects of Line Balancing 557

Economic Approaches to Environmental Decision Making 421
Efficient Use of Non-Renewable Resources 371
Energy Forecasting 493
Environmental Impact Statements 431
Evaluating Management Education (Editorial) 481
Evaluation of Management Information Systems 557

Exercise in Probability Encoding 355
External Costs: Myth or Rationale for State Intervention? 385

Four Examples of Artless Modelling 163
Futures Literature and Futures Forecasting—a Critical Review 33

Goal Programming Model for Improved Transportation Problem Solutions 367

Handling Financial Risks 183
Hierarchal Location–Allocation Problem 137

Improving MIS Project Selection 527
In Defense of Determinism (Feedback) 180
Increasing the Effectiveness of Modeling 521
Industrial Relations Problems—OR's Contribution 513
Information as a Tangible Benefit (Feedback) 104
Informational Impediments to the Use of Capital Budgeting Models 67
Integrating Model of Motivated Work Behaviour 297
Inventory Control of Spares in a Transport Corporation—a Case Study 153
Inventory Management and Cost-Benefit Analysis: a Case Study 321

Lateral Consistency? (Editorial) 173
Linear Programming: Some Unsuccessful Applications 257
Liquidity Planning in a Small Bank 287
Lognormal Approximation to the Lead Time Demand in Inventory Control 553

Modelling the Use of the Manager's Time 55
Models for Decision-Making in the Public Sector 399

Normal Approximations for the Greater of Two Normal Random Variables 361

On the Nature of Problems in Consulting Practice 119
On Normative Policy Models in Developing Countries 359
On the Optimum Location of Training Centers: a Case Study 569
On Solutions that are Better Than Most 249

People and Size (Feedback) 101
Personal and Organizational Value Systems: How Should we Treat These in OR Studies? 503
Planning, Futures, and the Skeptics (Feedback) 273
Planning of a Department Store 25
Political Man (Feedback) 180
Portfolio Model for Foreign Exchange Exposure Management 339
Power Corrupts (Editorial) 269
Programme Budgeting in the Health Sector 451
Public Expenditure and Public Accountability 469
Public Risk from Potential LNG Spills 364
Public Sector Decision-Making (Editorial) 379

Quantitative Models for Optimal Rest Period Scheduling: a Note 565
Question of Size (Editorial) 1
Question of Size (Feedback) 179
Question of Size (Feedback) 489

Relative Success of Marketing Decision Aids: a Survey 15
Revision of Consumer Intention: Two Models 241
Risk Analysis of an LNG Terminal 191

Scheduling and the Problem of Computational Complexity 233
Solving the Two-Stage Cutting Stock Problem 145
Some Useful Ratios in Evaluating Performance 166
State of Variable Costs in Profitability Planning 82
Status of the Systems Approach 219
Supportive Application of Management Science to Marketing Strategy Formulation 207

Technical Change and Employment in the Post-War Gas Industry 105

Use of Economic Appraisal in Transportation Analysis 441

Vroom–Yetton Leadership Model (Feedback) 489

World Strike Wave 43

Aims and Scope

The purpose of OMEGA is to provide a vehicle for reporting developments in management science, operational research and managerial economics, including research results and applications. Published material ranges from original contributions to review articles describing the state of the art in specific areas, together with shorter critical assessments of particular management techniques. Other features of the journal are the Memoranda section for short communications, Feedback (a correspondence column) and a register for theses and dissertations.

The journal is intended to serve the needs of practising managers, specialists in management services, operational research workers and management scientists, management consultants, academics, students and research personnel.

Contributions may be made in any of the following categories:

1. *State of the art.* These papers would normally be more than 5000 words long, devoted to an interpretation and evaluation of existing knowledge in a particular field or function of management. Such papers should aim to be valuable both to practising managers and also to research workers and should therefore include a detailed bibliography.

2. *Theory.* This category caters for papers in specialised fields, 1500–5000 words long, which report research results and new theoretical developments.

3. *Applications.* These papers describe interesting applications of management science techniques and should typically be 1500–5000 words in length.

4. *Memoranda.* This section is devoted to short contributions, preferably under 600 words, to preliminary communications for new ideas and propositions, technical notes, brief descriptions of internal research reports or theses/dissertations, extension or critique of widely accepted concepts, brief accounts of applications and implementation. The intention is to publish such memoranda with as little delay as possible. Items for Memoranda Section should have the minimum number of diagrams (preferably none if possible) and lists of references should also be pared to the absolute minimum.

5. *Feedback.* Correspondence is invited on issues of significance in the field of management. This need not necessarily relate to material previously published in OMEGA.

6. *International Register of Theses and Dissertations.* Information for inclusion in this Section should be presented in the style of the Journal.

Annual Subscription Rates (1980)

Published bi-monthly. For libraries, university departments, government laboratories, industrial and other multiple-reader institutions U.S. $143.00 per annum; 2–yr subscription rate $271.70 (including postage and insurance). *Specially reduced rates to individuals*: In the interests of maximising the dissemination of material published in this important international journal we have established a two-tier price structure. Any individual whose institution takes out a library subscription may purchase a second or additional subscription for their use at the much reduced rate of U.S. $30.00 (£12.50) *per annum.* Subscription enquiries from customers in North America should be sent to: Pergamon Press Inc., Maxwell House, Fairview Park, Elmsford, NY 10523, U.S.A. and for the remainder of the world to: Pergamon Press Ltd., Headington Hill Hall, Oxford OX3 0BW, England.

Microform Subscriptions and Back Issues

Back issues of all previously published volumes are available in the regular editions and on microfilm and microfiche. Current subscriptions are available on microfiche simultaneously with the paper edition and on microfilm on completion of the annual index at the end of the subscription year.

Publishing Office

Pergamon Press Ltd., Hennock Road, Marsh Barton, Exeter, Devon EX2 8RP, England

Subscription and Advertising Offices

Pergamon Press Ltd., Headington Hill Hall, Oxford OX3 0BW, England
Pergamon Press Inc., Maxwell House, Fairview Park, Elmsford, New York 10523, USA

Copyright 1979 Pergamon Press Ltd

It is a condition of publication that manuscripts submitted to this journal have not been published and will not be simultaneously submitted or published elsewhere. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. However, assignment of copyright is not required from authors who work for organisations which do not permit such assignment. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microform or any other reproductions of similar nature and translations. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, mechanical, photocopying, recording or otherwise, without permission in writing from the copyright holder.

U.S. Copyright Law applicable to users in the USA

The Article Fee Code on the first page of an article in this journal indicates the copyright owner's consent that in the USA copies may be made for personal or internal use provided the stated fee for copying beyond that permitted by Section 107 or 108 of the United States Copyright Law is paid. The appropriate remittance should be forwarded with a copy of the first page of the article to the Copyright Clearance Centre Inc. PO Box 765, Schenectady, NY 12301. If a code does not appear copies of the article may be made without charge, provided permission is obtained from the publisher. The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works or for resale. Specific written permission must be obtained from the publisher for such copying. In case of doubt please contact your nearest Pergamon office.

omega

The International Journal of Management Science
Volume 7, Number 1, 1979

Contents

SAMUEL EILON	1	Editorial—A Question of Size
WH JONES, MH OAKLEY	9	A Case Study in Venture Management
JRC WENSLEY	15	Relative Success of Marketing Decision Aids: A Survey
R FLAVELL, E PENN, GR SALKIN	25	The Planning of a Department Store
BHP RIVETT	33	Futures Literature and Futures Forecasting—A Critical Review
DUDLEY JACKSON, TIM SWEET	43	The World Strike Wave
DANIEL J BROWN	55	Modelling the Use of the Manager's Time
RJ GRAHAM, J SELTZER	61	An Application of Catastrophe Theory to Management Science Process
LAWRENCE A GORDON, DAVID F LARCKER, FRANCIS D TUGGLE	67	Informational Impediments to the Use of Capital Budgeting Models
	75	**Memoranda**
STEPHEN P BRADLEY, SHERWOOD C FREY JR	77	Capital Rationing and Discounting in Public Sector Investment Decisions
JOHN F KOTTAS, HON-SHIANG LAU	80	A Decision Model with Stochastic Cost and Demand Curves
GEORGE COSMETATOS, NICHOLAS BARBAROUSSIS and SAMUEL EILON	82	The State of Variable Costs in Profitability Planning
	85	International Register of Theses and Dissertations
	i	Announcements

Special Notice

To avoid simultaneous, multiple submissions to journals having similar interests, the Editors of *Management Science*, the *Operational Research Quarterly*, *Operations Research*, *Omega* and *Naval Research Logistics Quarterly* have developed a system of exchange submission lists.

Because refereeing capability is a scarce resource, we cannot tolerate the duplication of effort that follows from multiple submissions. We hope that the elimination of multiple submissions will make the refereeing process more efficient, and thereby decrease the time required for refereeing. This is a major objective of all five publications. Other journals with similar interests may soon be included in this information interchange.

omega

The International Journal of Management Science
Volume 7, Number 2, 1979

Contents

Editorial

SAMUEL EILON — 89 — Ackoff's Fables

Feedback

SIR TERENCE BECKETT — 101 — People and Size

JUDITH ATHERTON, GORDON WILLS — 104 — Information as a Tangible Benefit

Main Papers

RUSSELL MOSELEY — 105 — Technical Change and Employment in the Post-War Gas Industry

RICHARD M BURTON, WILLIAM W. DAMON — 113 — Budgets for Integrating Decentralized Investment and Production Planning

COLIN EDEN, DAVID SIMS — 119 — On the Nature of Problems in Consulting Practice

MICHAEL FIRTH — 129 — The Disclosure of Information by Companies

SUBHASH NARULA, UGONNAYA OGBU — 137 — An Hierarchal Location–Allocation Problem

ROBERT W HAESSLER — 145 — Solving the Two-Stage Cutting Stock Problem

PREM VRAT, SUBASH BABU — 153 — Inventory Control of Spares in a Transport Corporation—A Case Study

Memoranda

HP WILLIAMS — 163 — Four Examples of Artless Modelling

SAMUEL EILON — 166 — Some Useful Ratios in Evaluating Performance

International Register of Theses and Dissertations — 169

omega

The International Journal of Management Science
Volume 7, Number 3, 1979

Contents

Editorial

SAMUEL EILON 173 Lateral Consistency?

Feedback

RL ACKOFF 179 Ackoff's Fables

STEN OLOF GUSTAVSSON 179 A Question of Size

NANCY FOY 180 Political Man

CA GLISSON 180 In Defense of Determinism

Main Papers

PETER G MOORE 183 Handling Financial Risks

RALPH L KEENEY, RAM B KULKARNI KESHAVAN NAIR 191 A Risk Analysis of an LNG Terminal

JEAN-CLAUDE LARRÉCHÉ, EDWARD C STRONG 207 A Supportive Application of Management Science to Marketing Strategy Formulation

RA BRYER 219 The Status of the Systems Approach

JR KING 233 Scheduling and the Problem of Computational Complexity

JAMES W GENTRY, JAMES SHANTEAU 241 Revision of Consumer Intention: Two Models

STANFORD BAUM, ROBERT CARLSON 249 On Solutions that are Better Than Most

LEWIS J CORNER 257 Linear Programming: Some Unsuccessful Applications

International Register of Theses and Dissertations 263

omega

The International Journal of Management Science
Volume 7, Number 4, 1979

Contents

Editorial

SAMUEL EILON 269 Power Corrupts

Feedback

ROY AMARA 273 Planning, Futures, and the Skeptics

Main Papers

DUNCAN DAVIES 275 Change, Clarity and Clausewitz

DALEN T CHIANG 287 Liquidity Planning in a Small Bank

MARTIN WALBANK 297 An Integrating Model of Motivated Work Behaviour

MO GIESEN, PG BENNETT 309 Aristotle's Fallacy: A Hypergame in the Oil Shipping Business....

STEVEN NAHMIAS, GEOFFREY LEVINE 321 Inventory Management and Cost Benefit Analysis: A Case Study

NIGEL MEADE, MALCOLM J FINNEY 333 Analysis of the Choice Between Domestic and Foreign Loan Facilities

LUC A SOENEN 339 A Portfolio Model for Foreign Exchange Exposure Management

ARTHUR J KEOWN, BERNARD W TAYLOR III, CALVIN P DUNCAN 345 Allocation of Research and Development Funds: A Zero-One Goal Programming Approach

Memoranda

SH ARCADE 355 An Exercise in Probability Encoding

N DOHOLAKIA, R KHURANA, L BHANDARI, MN VORA 359 On Normative Policy Models in Developing Countries

WILLIS R GREER JR, GERALD J LACAVA 361 Normal Approximations for the Greater of Two Normal Random Variables

RALPH L KEENEY 364 Public Risk From Potential LNG Spills

NK KWAK, MJ SCHNIEDERJANS 367 A Goal Programming Model for Improved Transportation Problem Solutions

DRF SIMPSON 371 The Efficient Use of Non-Renewable Resources

International Register of Theses and Dissertations 375

omega

The International Journal of Management Science
Volume 7, Number 5, 1979
Special Issue on Public Sector Decision-Making

Contents

Editorial

DAVID PEARCE	379	Public Sector Decision-Making

Main Papers

MS COMMON	385	External Costs: Myth or Rationale for State Intervention?
KJ BUTTON	399	Models for Decision-Making in the Public Sector
RK TURNER	411	Cost–Benefit Analysis—a Critique
J LOWE, D LEWIS	421	Economic Approaches to Environmental Decision-Making
M BARRETT	431	Environmental Impact Statements
CA NASH	441	The Use of Economic Appraisal in Transportation Analysis
ALASTAIR GRAY, ROBERT STEELE	451	Programme Budgeting in the Health Sector
JOHN M TREDDENICK	459	Cost-Effectiveness in Defence Expenditure
DAVID HEALD	469	Public Expenditure and Public Accountability

omega

The International Journal of Management Science
Volume 7, Number 6, 1979

Contents

Editorial

SAMUEL EILON 481 Evaluating Management Education

Feedback

KC BOWEN 489 A Question of Size

JOHN J MORSE 489 The Vroom–Yetton Leadership Model

MARTIN K STARR 490 Ackoff's Fables

Main Papers

ANDREW STRATTON 493 Energy Forecasting

KC BOWEN 503 Personal and Organisational Value Systems: How Should we Treat these in OR Studies?

JR MANN, GH MITCHELL 513 Industrial Relations Problems—OR's Contribution

MYLES A VOGEL 521 Increasing the Effectiveness of Modeling

MICHAEL J GINZBERG 527 Improving MIS Project Selection

JPC KLEIJNEN 539 Evaluation of Management Information Systems

WILBUR A STEGER 545 Assessment of Fifteen Years of Urban Modeling

PANDU R TADIKAMALLA 553 The Lognormal Approximation to the Lead Time Demand in Inventory Control

DOMINIC SCULLI 557 Dynamic Aspects of Line Balancing

Memoranda

STEPHEN E BECHTOLD 565 Quantitative Models for Optimal Rest Period Scheduling: a Note

HIROHIDE HINOMOTO 567 Capital Rationing Decision with Internal and External Funds

LARRY E SHIRLAND, PETER M ELLIS 569 Optimum Location of Training Centers

RN WOOLLEY 574 Creativity and Operational Research

International Register of Theses and Dissertations 577

Errata i